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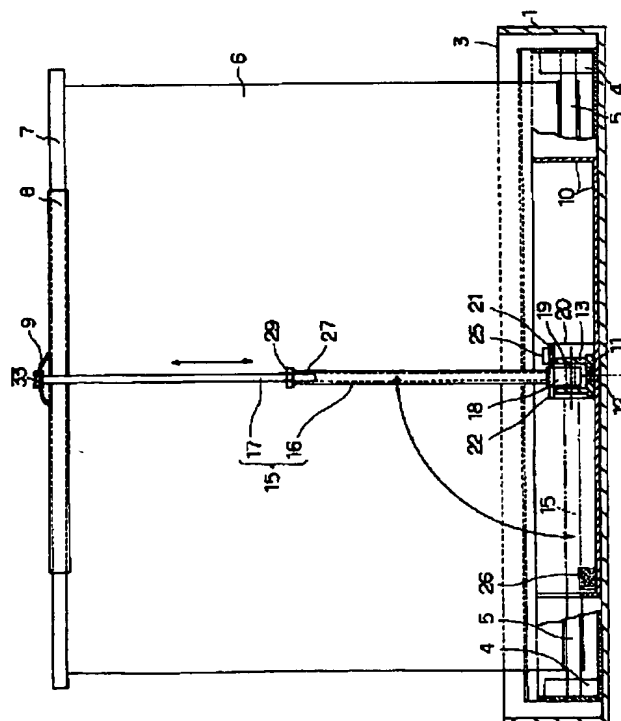
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(54)【考案の名称】 投影スクリーン装置

(57)【要約】

【目的】 スクリーンを壁面に十分に寄せた状態で展張状態にさせることができ、しかも家庭普及型として簡便な構造で、低コストに量産できる投影スクリーン装置を提供すること。

【構成】 横長で、上面を開口部としたスクリーン格納箱1と、この格納箱内に箱長手方向に略水平に設けられ、スクリーン巻き込み方向に常時回転付勢されたスクリーン巻き込み軸5と、該軸に巻き込ませたスクリーン6と、前記格納箱内に箱長手方向中央部において基部を軸19で枢着され、該軸を中心に該格納箱内に前記スクリーン巻き込み軸に略平行に倒し込み回動でき、また該格納箱から立て起こし回動できる、伸縮式のスクリーンスタンド15と、立て起こしたスタンドの倒れ止め手段13・22と、スクリーンスタンドの上端部に設けたスクリーン吊り環掛け止め用フック部材33を有してなる投影スクリーン装置。



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【実用新案登録請求の範囲】

【請求項1】 横長で、上面を開口部としたスクリーン格納箱1と、
該スクリーン格納箱1内に箱長手方向に略水平に設けられ、スクリーン巻き込み方向に常時回転付勢されたスクリーン巻き込み軸5と、
該軸5に巻き込ませたスクリーン6と、
前記格納箱1内に箱長手方向中央部において基部を軸19で枢着され、該軸19を中心に該格納箱1内に前記スクリーン巻き込み軸5に略平行に倒し込み回動でき、また該格納箱1から立て起こし回動できる、伸縮式のスクリーンスタンド15と、
立て起こしたスクリーンスタンド15の倒れ止め手段13・22と、
前記スクリーンスタンド15の上端部に設けたスクリーン吊り下げ係止部材33を有してなることを特徴とする投影スクリーン装置。

【請求項2】 スクリーンスタンド15は倒し込み姿勢と立て起こし姿勢の略90°の間だけ軸19を中心とする回動自由度があり、またスクリーンスタンド15は立て起こした状態で旋回操作でき、その旋回によりスクリーンスタンド倒れ込み側がスタンド干渉部材22に対向してスタンド15の倒れ止めがなされることを特徴とする請求項1に記載の投影スクリーン装置。

【請求項3】 スクリーンスタンド15が立て起こされたとき、スタンド15側と不動部材45側に相対的に設けた爪部57と凹部58とが対応して係合することでスタンド15の倒れ止めがなされることを特徴とする請求項1に記載の投影スクリーン装置。

【図面の簡単な説明】

【図1】 第1の実施例装置のスクリーン展張状態時（使用時）の切欠き背面図

【図2】 スクリーン・スタンド格納状態時の切欠き背*

* 面図

【図3】 図2の(3)-(3)線に沿う横断面図

【図4】 図2の(4)-(4)線に沿う横断面図

【図5】 スクリーン・スタンド格納状態時の要部の平面図

【図6】 スタンド立て起こし状態時のスタンド倒れ止め前の要部の平面図

【図7】 スタンド倒れ止め状態の要部の平面図

【図8】 要部の分解斜視図

10 【図9】 スタンドの副支柱ストップ機構部の縦断面図（ストップ状態時）

【図10】 スタンドの副支柱ストップ機構部の縦断面図（ストップ解除状態時）

【図11】 ストップレバーの斜視図

【図12】 第2の実施例装置のスタンド立て起こし状態時の要部の縦断側面図

【図13】 スタンド立て起こし状態時の要部の一部切欠き背面図

20 【図14】 スタンド倒れ止め解除状態時の要部の縦断側面図

【図15】 要部の分解斜視図

【符号の説明】

1 スクリーン・スタンド格納箱

3 スクリーン格納ハウジング

5 スクリーン巻き込み軸

6 スクリーン

9 スクリーン吊り環

15 伸縮式のスクリーンスタンド

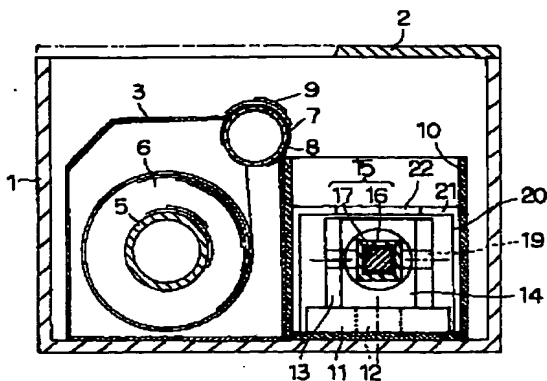
16 主支柱

30 17 副支柱

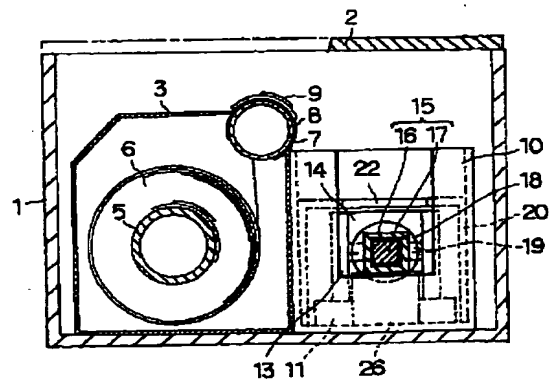
27 副支柱ストップ・ストップ解除レバー

33 スクリーン吊り環掛け止め用フック部材

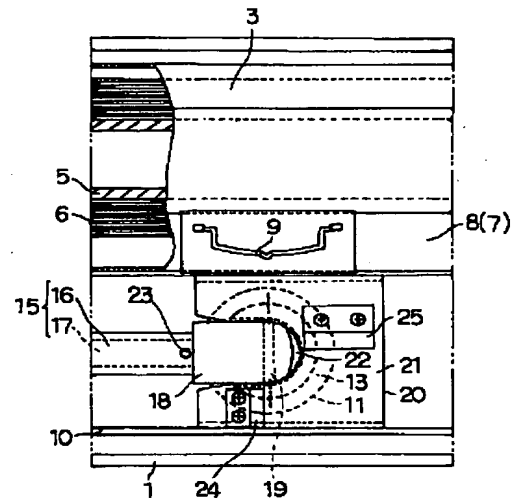
【図3】



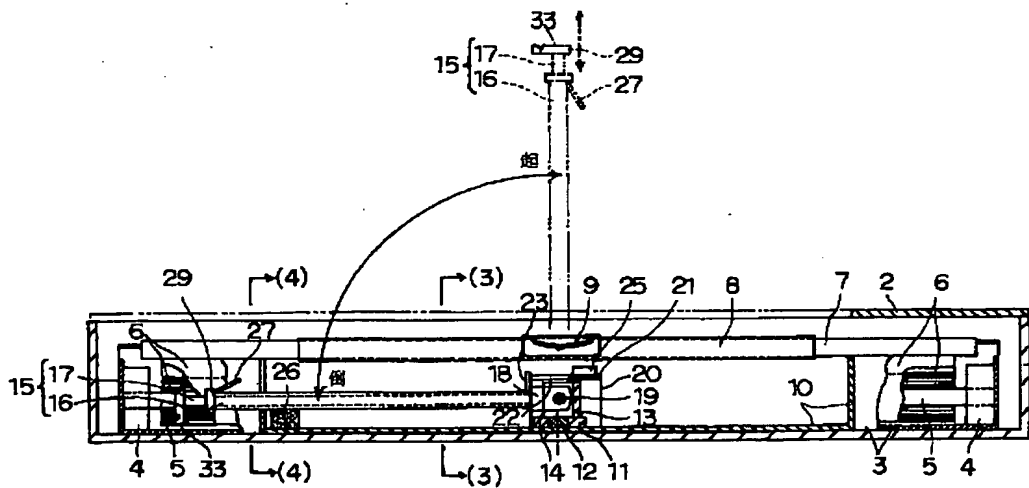
【図4】



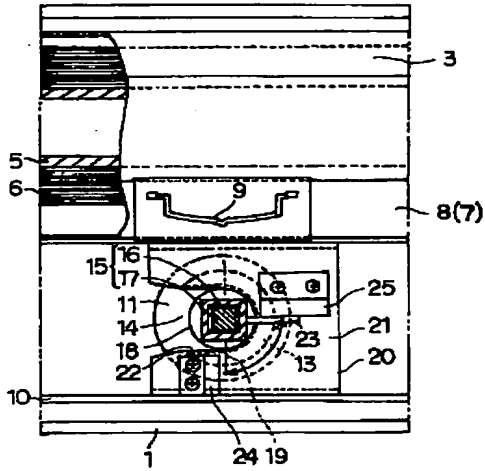
【図5】



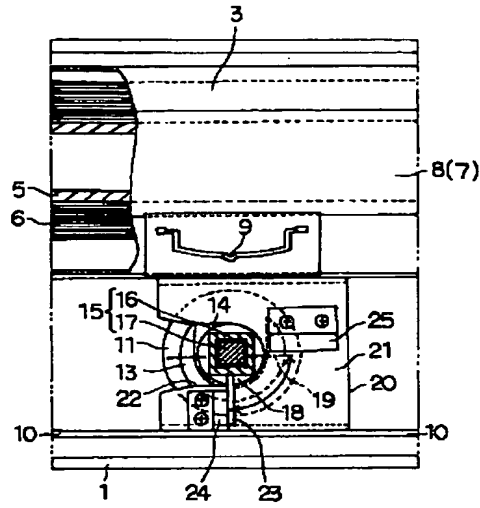
【図 2】



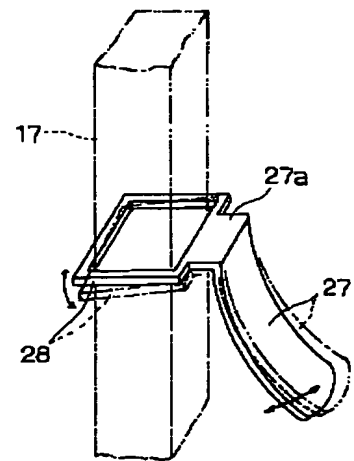
【図6】



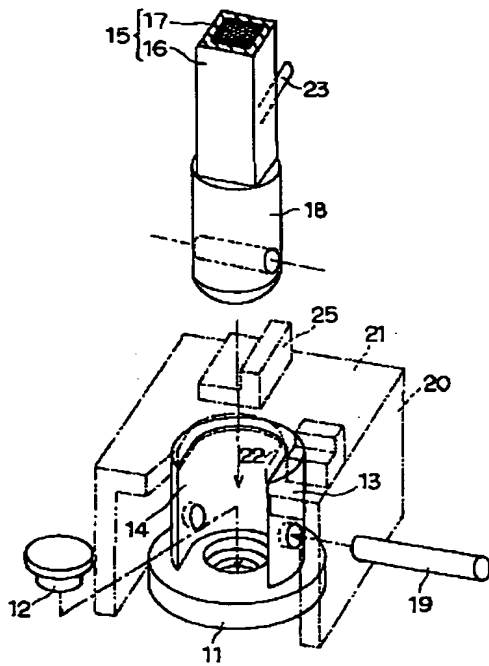
【図7】



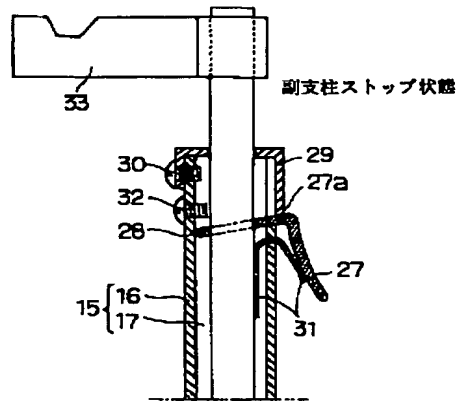
【図11】



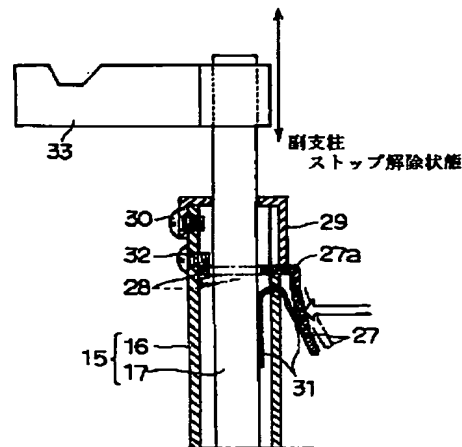
【図8】



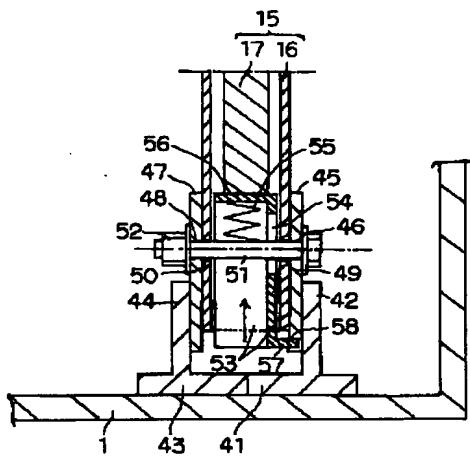
【図9】



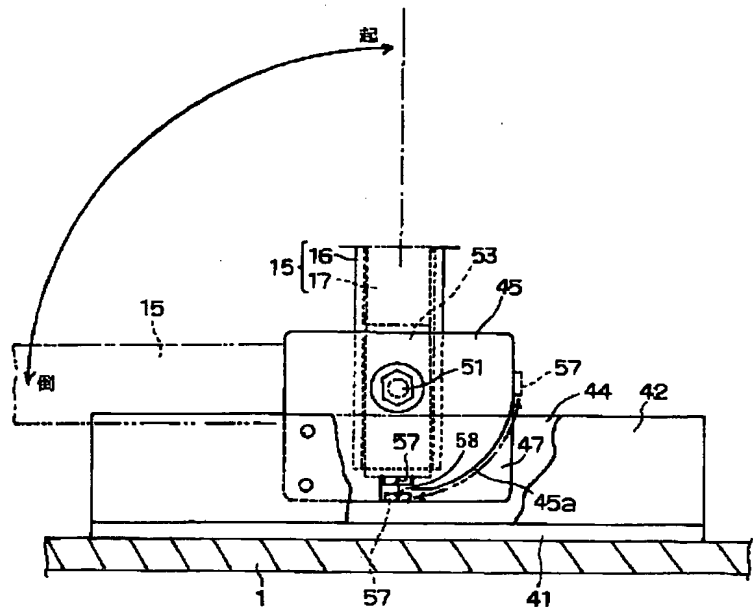
【図10】



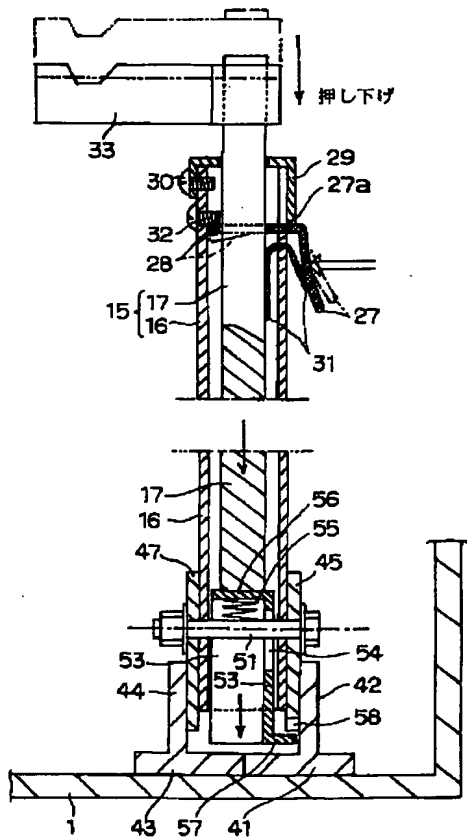
【図12】



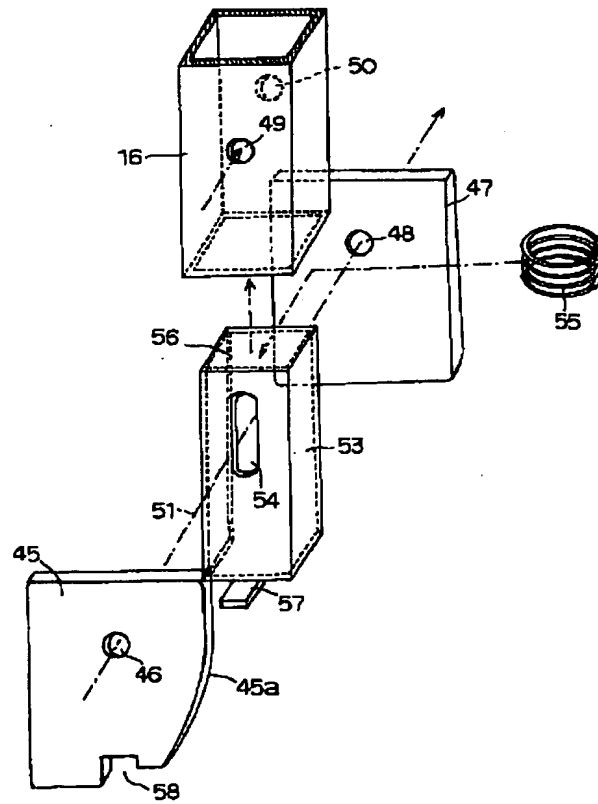
【図13】



【図14】



【図15】



【考案の詳細な説明】**【0001】****【産業上の利用分野】**

本考案は、ビデオプロジェクタ・映写機・幻灯機等の投影システム機器の投影スクリーン装置に関する。

【0002】**【従来の技術】**

簡便な投影スクリーン装置として三脚スタンド式がある。これは三脚スタンドにスクリーンを吊り下げて展張支持させるもので、学校や家庭等で多く利用されている。

【0003】

予め位置選定した天井部や壁面上部にスクリーンボックスを固定配設し、不使用時はそのスクリーンボックス内にスクリーンを巻き込ませて格納させ、使用時にスクリーンを巻き戻して、吊り下げ状態にする定置式の電動型又は手動型の装置もある。

【0004】

また床置き式として、不使用時は床上に据え置いたスクリーンボックス内にスクリーンを巻き込ませ、またスプリングや流体圧シリンダ等で立ち上がり動作するスクリーン支持昇降動機構を畳み込ませて格納した状態にさせ、使用時はスクリーン支持昇降動機構の立ち上がり動作によりスクリーンを巻き戻させながら下から上へせり上げさせて展張状態に保持させる装置もある。

【0005】**【考案が解決しようとする課題】**

近時は家庭へのビデオプロジェクタの普及が目覚ましいが、家庭の居間等の比較的狭い場所で使用するスクリーン装置としては、前述の定置式の装置は設置工事を必要とし、またスクリーンの位置替えの自由度がないので、家庭用としては不適である。

【0006】

床置き式はスクリーンボックスを移動することでスクリーンの位置替えの自由

度があるが、現在市販のものはスクリーン支持昇降動機構等にコストがかかっていて比較的高価なものである点に難点がある。

【0007】

この点、三脚スタンド式は簡便で手軽であるが、開かせた三脚はかなりの広がり面積をとるので、壁ぎわに寄せて立ててもスクリーン背面と壁面との間に数10cmのデッドスペースが生じる。狭い居間等ではスクリーンはできるだけ壁面に寄せたいので、上記の大きなデッドスペースができることは好ましくない。

【0008】

そこで本考案は、スクリーンを壁面に十分に寄せた状態で展張状態にさせることができ、しかも家庭普及型として簡便な構造で、低コストに量産できる投影スクリーン装置を提供することを目的とする。

【0009】

【課題を解決するための手段】

本考案は下記の構成を特徴とする投影スクリーン装置である。

【0010】

(1) 横長で、上面を開口部としたスクリーン格納箱と、
該スクリーン格納箱内に箱長手方向に略水平に設けられ、スクリーン巻き込み方向に常時回転付勢されたスクリーン巻き込み軸と、
該軸に巻き込ませたスクリーンと、
前記格納箱内に箱長手方向中央部において基部を軸で枢着され、該軸を中心に該格納箱内に前記スクリーン巻き込み軸に略平行に倒し込み回動でき、また該格納箱から立て起こし回動できる、伸縮式のスクリーンスタンドと、
立て起こしたスクリーンスタンドの倒れ止め手段と、
前記スクリーンスタンドの上端部に設けたスクリーン吊り下げ係止部材を有してなることを特徴とする投影スクリーン装置。

【0011】

(2) スクリーンスタンドは倒し込み姿勢と立て起こし姿勢の略90°の間だけ軸を中心とする回動自由度があり、またスクリーンスタンドは立て起こした状態で旋回操作でき、その旋回によりスクリーンスタンド倒れ込み側がスタンド干

渉部材に対向してスタンドの倒れ止めがなされることを特徴とする（１）に記載の投影スクリーン装置。

【００１２】

（３）スクリーンスタンドが立て起こされたとき、スタンド側と不動部材側に相対的に設けた爪部と凹部とが対応して係合することでスタンドの倒れ止めがなされることを特徴とする（１）に記載の投影スクリーン装置。

【００１３】

【作用】

スクリーンを使用するときは、スクリーン格納箱を壁ぎわに寄せて床に寝せ置き、該格納箱内に倒し込んで格納されているスクリーンスタンドを手で支軸を中心に立て起こして倒れ止め手段で倒れ止めさせ、スタンドを伸ばして適当高さに設定し、スクリーン巻き込み軸に巻き込み格納されているスクリーンを巻き込み軸のスクリーン巻き込み付勢回転力に抗して巻き戻してスクリーンの上辺部をスタンド上端部の吊り下げ係止部に掛け止めることでスクリーンが展張状態に保持される。

【００１４】

スクリーン展張状態の装置全体は横長のスクリーン格納箱が安定な台座となって安定に床上に支持される。そして横長のスクリーン格納箱は奥行が小さいから展張状態のスクリーンと壁との間のデッドスペースは小さく、狭い居間でもスクリーンを壁側に十分に寄せた状態で使用できる。

【００１５】

使用後のスクリーンの格納は上記とは逆手順であり、スタンド上端部スクリーンを外す。スクリーンはスクリーン巻き込み軸に該軸のスクリーン巻き込み付勢回転力により自然に巻き込まれてスクリーン格納箱内に格納される。スクリーンスタンドの高さを縮め、倒れ止め手段によるスタンドの倒れ止めを解除させ、該スタンドを支軸を中心に手で倒し込み回転して格納箱内に格納する。格納箱の上面開口部には蓋板をしてゴミやホコリの侵入を防ぐのが好ましい。格納箱をたてて適当な場所に収納保管することもできる。

【００１６】

この投影スクリーン装置は、スクリーンを1本の起倒式・伸縮式のスタンドで展張支持させる構成であるから全体の装置構成が簡単であり、低コストに量産できる。

【0017】

【実施例】

〈実施例1〉（図1～図11）

図1はスクリーン展張状態時（スクリーン使用時）の装置の切欠き背面図、図2はスクリーン・スタンド格納状態時の装置の切欠き背面図、図3は図2の（3）－（3）線に沿う拡大横断面図、図4は図2の（4）－（4）線に沿う拡大横断面図、図5はスクリーン・スタンド格納状態時の要部の平面図、図6はスタンド立て起こし状態時のスタンド倒れ止め前の要部の平面図、図7はスタンド倒れ止め後の状態の要部の平面図、である。

【0018】

1は上面を開放した横長のスクリーン格納箱であり、上面開口には開閉蓋板2が設けられる。

【0019】

3はこの格納箱内に固定して設けた横長のスクリーン格納ハウジング、4・4はこのハウジング内の長手両端部にそれぞれ設けた軸受、5はこの軸受4・4間に支持させたスクリーン巻き込み軸、6はこの軸5に下辺側が係止されていて該軸に巻き込まれるスクリーン、7は該スクリーン6の上辺側に設けた竿（横木）である。

【0020】

スクリーン巻き込み軸5は不図示の内蔵ばねによりスクリーン巻き込み方向に常時回転付勢されており、スクリーン6は自由状態において図2～図4のように該軸5に巻き込まれてハウジング3内に格納された状態に保持される。

【0021】

スクリーン上辺側の竿7はスクリーン6が十分に巻き込まれることでハウジング3の細幅のスクリーン出入口部に引っ掛かって受け止められた状態になっている。

【0022】

竿7は例えばアルミニウムの丸パイプであり、本例のものはしなりを防止するためにこの丸パイプの外側に更に補強用鞘部材8を外嵌してあり、長手方向の中央部には吊り環9を取りつけてある。

【0023】

10は格納箱内にスクリーン格納ハウジング3に並行させて固定して設けた、上面を開放した横長のスクリーンスタンド格納シャシである。

【0024】

11はこのシャシ10内の、シャシ長手方向の略中央部の底面位置（スクリーン6の幅方向の略中央部に対応）に、縦軸12を中心に回転自由に取り付けた旋回座、13はこの旋回座の上面側に同心一体に設けた縦筒部であり、この縦筒部は周壁の一部を切り欠いて側面開口部14を設けてある。

【0025】

15はスクリーンスタンドであり、本例は角パイプ材製の主支柱16と、この主支柱内に差し込んだ角材製の引き出し自由の副支柱17を有する伸縮式（入子式・テレスコピック式）のものである。

【0026】

18は主支柱16の下端に一体に取り付けたスタンド基座である。このスタンド基座18は前記旋回座11の縦筒部13内に内嵌する外径の短円柱状の部材である。このスタンド基座18は旋回座11の縦筒部13内に差し込まれていて、横軸19により該横軸を中心に、縦筒部13の側面開口部14側に横向きに倒し込んだ状態（図5）と、縦筒部13内に縦向きに起立させた状態（図6）との略90°の間だけ回転自由度を持たせて縦筒部13に連結させてある。

【0027】

図8は上記の旋回座11、縦軸12、縦筒部13、側面開口部14、スタンド下端のスタンド基座18、横軸19、の部分の分解斜視図である。

【0028】

20は上記旋回座11・縦筒部13を跨がせてシャシ10に一体に取り付けた門型のサブシャシであり、このサブシャシ20の上面板21の面には旋回座11

の縦筒部13の位置に対応させて図5・図6のように左方を開口側としたU字形の切欠き孔22を設けてある。このU字形切欠き孔22の半円部の径はスタンド下端の短円柱状スタンド基座18の径と略同じにしてある。

【0029】

旋回座11が、その縦筒部13の側面開口部14が上記サブシャシ20の上面板21の左横向きU字孔22の開口方向と略一致した左横向きの回転角状態にあるときは、図2・図5のようにシャシ10内に左横向きに倒し込み状態にあるスタンド15を横軸19を中心に図2の2点鎖線示、図6のように立て起し回転操作できる。また逆に立て起し状態から左横向きに倒し込み回転操作できる。

【0030】

スタンド15が左横向きの倒し込み状態から略垂直に立て起し回転されると、図6のように上向きとなったスタンド下端の短円柱状スタンド基座18の上端側の外周面部がサブシャシ20のU字孔22の半円部に当接して受け止められることでそれ以上のスタンド回転が阻止される。

【0031】

この図6のスタンド立て起し状態において、スタンド15を手で時計方向に回し操作する。この回し操作によりスタンド15・スタンド基座18・横軸19・円筒部13・旋回座11の全体が縦軸12を中心に時計方向に回転する。スタンド15を時計方向に略90°回し操作すると、図7のようにスタンド下端部に植設したストッパピン23がサブシャシ20の上面に設けた第1のストッパ部材24に衝接して受止められ、それ以上のスタンド回し操作が阻止される。

【0032】

この図7の状態においては、縦筒部13の上記の略90°時計方向回転で側面開口部14の向きが図6の左横向きから装置前向きに転換されることでサブシャシ20の上面板21面の左横向きU字孔22の開口方向と90°方向違いの状態となる。

【0033】

そのため、スタンド15の横軸19を中心とする円筒部側面開口部14側への倒れ込み回転、即ちスタンド15の装置前方への倒れ込み回転が、スタンド下端

のスタンド基座18の上端側外周面部がサブシャシ20のU字孔22の側縁部に当接して受け止められることで阻止される。即ちスタンド15は略垂直の立て起し姿勢状態に安定に保持される。

【0034】

図7の状態において、スタンド15を逆に反時計方向に略90°戻し回転操作すると、図6のようにストッパピン23がサブシャシ20の上面に設けた第2のストッパ部材25に衝接して受け止められ、それ以上のスタンド戻し回し操作が阻止される。

【0035】

この図6の状態においては、旋回座11の上記の略90°戻し回転により縦筒部13の側面開口部14の向きがサブシャシ20の上面板21面の左横向きU字孔22の開口方向と一致した状態に戻されるので、立て起し状態のスタンド15を横軸19を中心にシャシ10内に図2・図5のように左横向きに倒し込み回転操作できる。図2において、26はシャシ10内に倒し込んだスタンド15の先端側を受け止める緩衝ゴム座である。

【0036】

図9～図11によりスタンド15の主支柱16に対する副支柱17のストッパ機構を説明する。図9において、27はストップレバーであり、このストップレバー27は図11の斜視図に示したように、レバー先端側に四角形の輪板28を一体に形成してある。この輪板28の外形は角パイプ材製の主支柱16の内形よりもやや小さ目めであり、内形（穴形）は角材製の副支柱17の外形よりもやや大き目としてある。

【0037】

このストップレバー27は主支柱16の上端部の一側面に形成した切り欠き穴部にレバー部と輪板部との連設首部27aを落とし込み、輪板部を主支柱16内に嵌入させ、レバー部を外側にして係合させてある。副支柱17は輪板28内を通して主支柱16内に差し込まれている。29は主支柱16の上端部に嵌着してねじ止め30したキャップ部材である。このキャップ部材29によりストップレバー27のレバー部と輪板部の連設首部27aが上から押えられて外れ止めされ

、ストップレバー27はこの連設首部27aを中心に揺動自由である。

【0038】

31は主支柱16の壁面に形成したスリット孔から主支柱16内に先端側を差し込んだ板ばねであり、主支柱16内の副支柱17の側面とレバー27の裏面間に突張っている。

【0039】

この板ばね31の突張り力によりストップレバー27は連設首部27aを中心に図9上反時計方向に常時回動付勢されている。これにより輪板28が図9のように左下りに傾き、内形の前辺エッジ部と後辺エッジ部が副支柱17の前壁面部と後壁面部とに押し当てる。その押し当り摩擦力で副支柱17の主支柱16内へのずり下りが阻止される。副支柱17に大きな押し下げ負荷が加わっても、その負荷の方向は輪板28を更に左下りに傾かせる方向であるので、輪板28の内形の前辺エッジ部と後辺エッジ部の副支柱17の前壁面部と後壁面部に対する押し当り力が大きくなって副支柱17の主支柱16内へのずり下りは安定に阻止される。

【0040】

図9の副支柱ストップ状態においてストップレバー27を板ばね31に抗して図10のように押して輪板28の先端がストップねじ32に受止められるまで連設首部27aを中心に時計方向に回動させると、この状態では輪板28が略水平姿勢になって輪板28の内形の前辺エッジ部と後辺エッジ部の副支柱17の前壁面部と後壁面部に対する押し当りがなくなるので副支柱17のストップ状態が解除される。従って、副支柱17の主支柱16内からの引き出し操作、押し込み操作が自由となる。

【0041】

副支柱17を主支柱16から適当長さ引き出してストップレバー27から手をはなせば図9で説明した原理で副支柱17にストップがかかるから、副支柱17の主支柱16からの引き出し量、即ちスタンド15の高さを無段階に調節することができる。

【0042】

33は副支柱17の上端に設けたスクリーン吊り環掛け止め用フック部材であり、図2の倒し込み格納状態では下向き姿勢であり、図1の立て起こし・倒れ止め状態では装置前方を向いた姿勢となる。

【0043】

図2のスクリーン・スタンド格納状態において、スタンド15は主支柱16内に副支柱17を押し込んで全体の長さ（高さ）を短くした状態で倒し込まれて格納されている。

【0044】

使用時は格納箱1を壁ぎわに寄せて床上に寝せ置く。格納箱1内のスクリーンハウジング3側が装置前面側となる。蓋板2を開き、スタンド15を横軸19を中心に立て起こし（図2の2点鎖線示、図6）、次いでそのスタンド15を90°時計方向に回転させる（図7）。これにより立て起したスタンド15は安定に倒れ止めされる。

【0045】

ストップレバー27を押してスタンド15の副支柱17のストップ状態を解除して副支柱17を主支柱16内から引き出してスタンド15の全体高さを適当に調節してからストップレバー27から手をはなすことで副支柱17をストップ状態に保持させる。

【0046】

スクリーンハウジング3内に巻き込み格納されているスクリーン6をその上辺側の竿7を握って軸5のスクリーン巻き込み付勢力に抗して軸5から巻き戻させて引き上げ、竿7の中央部の吊り環9を副支柱17の上端側のフック部材33に引っ掛けて竿7に係止させる。これにより図1のようにスクリーン6が展張状態に保持される。

【0047】

使用後は上記とは逆の手順で、吊り環9をフック部材33から外してスクリーン6を軸5の巻き込み力で軸5に巻き込ませてスクリーンハウジング3内に格納させる。

【0048】

ストップレバー27を押してスタンド15の副支柱17のストップ状態を解除して副支柱17を主支柱16内へ押し込んでスタンド15の全体高さを短くし、このスタンド15を90°反時計方向に戻し回転することで倒れ止めを解除し(図6)、横軸19を中心に左方へ倒し込んでシャシ10内に格納状態にする(図2)。格納箱1の上面開口部に蓋板2をしてゴミやホコリの侵入を防ぐ。格納箱1をたてて適当な場所に収納保管することができる。

【0049】

〈実施例2〉(図12~図15)

本実施例はスタンド15の起倒・倒れ止め手段の他の例である。

【0050】

図12において、41・43はそれぞれ縦板部42・44を具備させた一对の組付け台座であり、格納箱1内の底面に対向させて固定配設してある。

【0051】

45・47は上記一对の組付け台座41・43の各縦板部42・44の内側に対向させて固定して設けた一对の軸受板、46・48はこの各軸受板45・47に対向させて設けた軸挿通孔である。

【0052】

スタンド15の主支柱16の下端部の対向2側面に軸挿通孔49・50を具備させてあり、この主支柱16の下端部を上記一对の軸受板45・47の間に位置させて、軸受板45の軸挿通孔46、主支柱16の軸挿通孔49・50、軸受板47の軸挿通孔48を一致させてボルト軸51を挿通してナット52で適当に締め付けて抜け止めする。従って、スタンド15の主支柱16は軸受板45・47の間において軸51を中心に起倒回動自由に支持される。

【0053】

53はスタンド15の主支柱16の下端部内に嵌入させた上下動駒部材である。54はこの駒部材の側壁部に設けた上下方向長孔であり、前記の軸51はこの長孔54を貫通して、駒部材53は該軸51に邪魔されることなく主支柱16内を上下方向に移動可能である。55は駒部材53の天井面板56の内面と軸51との間に縮設したコイルばねであり、駒部材53はこのコイルばね55によ

り主支柱16内を引き上げ方向に常時移動付勢される。57は駒部材53の下端に設けた外方折り曲げ爪部である。

【0054】

図15は上記の軸受板45・47、主支柱16の下端部、上下動駒部材53、コイルばね55、の部分の分解斜視図である。

【0055】

図12はスタンド15の立て起こし状態時の縦断側面図、図13は一部切欠き背面図である。このスタンド立て起こし状態時にはコイルばね55で常時引き上げ移動付勢されている駒部材53の下端の外方折り曲げ爪部57が軸受板45の下辺部に設けた係合凹部58に落ち込んで係合した状態にあり、この爪部57と凹部58との係合によりスタンド15の軸51を中心とする回動が阻止されている。即ち、立て起こし状態のスタンド15の倒れ止めがなされている。

【0056】

スクリーンの展張操作は前記実施例1のものと同様である。即ち、上記のように立て起こし・倒れ止めして状態にあるスタンド15の副支柱17のストップ状態をストップレバー27を押して解除し(図10)、副支柱17を主支柱16内から引き出してスタンド15の全体高さを適当に調節してからストップレバー27から手を離すことで副支柱17をストップ状態に保持させる。スクリーンハウジング3内に巻き込み格納されているスクリーン6をその上辺側の竿7を握って軸5のスクリーン巻き込み付勢力に抗して軸5から巻き戻させて引き上げ、竿7の中央部の吊り環9を副支柱17の上端部のフック部材33に引掛けて竿7に係止させる。これにより図1と同様にスクリーン6が展張状態に保持される。

【0057】

使用後は上記とは逆の手順で、吊り環9をフック部材33から外してスクリーンを軸5の巻き込み力で軸5に巻き込ませてスクリーンハウジング3内に格納させる。

【0058】

ストップレバー27を押してスタンド15の副支柱17のストップ状態を解除して副支柱17を主支柱16内へ押し込む。副支柱17の下端が前記駒部材53

の天井面板56に当たった後も更にコイルばね55に抗して副支柱17を図14のように押し下げ操作すると、駒部材53が下方へ押し下げられて爪部57が下がり軸受板45の下辺部の凹部58から抜けて爪部57と凹部58との係合が外れる(図14の状態、図12の2点鎖線示の状態)。

【0059】

この係合外れ状態においてはスタンド15を軸51を中心に図12上反時計方向へ倒し回転することが可能であり(図13の2点鎖線示の状態)、スタンド15を軸51を中心に格納箱1内に図2と同様に左横向きに倒し込んだ格納状態にできる。

【0060】

図12・図15において、45aは軸受板45に形成した、前記駒部材53の爪部57についての円弧ガイド部であり、スタンド15の起倒回転過程時は上記の爪部57はこの円弧ガイド部に沿って摺動する。

【0061】

図13の2点鎖線示のスタンド倒し込み状態において、スタンド15を軸51を中心に立て起こし回転し、スタンド15が略垂直に立て起こされると、駒部材53の爪部57が軸受板45の下辺部の凹部58に図12・図13のように落ち込み、爪部57と凹部58とが係合状態になって前述したように立て起こしたスタンド15の倒れ止めが自然になされる。

【0062】

【考案の効果】

以上のように本考案の投影スクリーン装置は、スクリーンを壁面に十分に寄せた状態で展張状態にさせることができ、しかも簡便な構造で低コストに量産できる構成のもので、例えばしかも家庭普及型の装置として有効適切である。

CLAIMS

[The scope of a claim for utility model registration]

[Claim 1]The screen storage case 1 which was oblong and used the upper surface as an opening, and the screen contamination axis 5 by which was provided in an abbreviated level in this screen storage case 1 at a box longitudinal direction, and rotation energization was always carried out in the direction of screen contamination, In a box longitudinal direction center section, a base is pivoted with the axis 19 in the screen 6 made to involve in this axis 5, and said storage case 1, The elastic-type screen stand 15 which pushes down on abbreviated parallel, can rotate on said screen contamination axis 5 in this storage case 1 focusing on this axis 19, and starts and can rotate from this storage case 1, A projection screen device which has the screen hanging locking member 33 provided in the means 13 and 22 and an upper bed part of said screen stand 15 that the raised screen stand 15 should stop falling, and is characterized by things.

[Claim 2]Topple the screen stand 15, stand with a lump posture, and between abbreviated 90 degrees of a lifting posture has the rotation flexibility centering on the axis 19, The projection screen device according to claim 1, wherein the screen stand 15 can carry out gyrating operation in the state where it started, the screen stand failure lump side counters the stand interference member 22 by the revolution, the stand 15 falls and a stop is made.

[Claim 3]The projection screen device according to claim 1, wherein the stand 15 breaks down from the claw part 57 and the crevice 58 which were provided relatively to the stand 15 and fixed member 45 side being corresponded and engaged when the screen stand 15 is raised and a stop is made.

DETAILED DESCRIPTION

[Detailed explanation of the device]

[0001]

[Industrial Application]

This design is related with the projection screen device of projection system apparatus, such as a video projector, a movie projector, and a slide projector.

[0002]

[Description of the Prior Art]

There is a tripod stand type as a simple projection screen device. This hangs a screen to a tripod stand, makes it carry out spreading support, and is mostly used for it at a school, a home, etc.

[0003]

Carrying out fixed allocation of the screen box in the ceiling part and wall surface which carried out location beforehand, the time of non-use makes a screen involve in in the screen box, is made to store, rewinds a screen at the time of use, and also has a device of the electric type of a stationary type, or a hand mold made into hanging state voice.

[0004]

The time of non-use makes a screen involve in in the screen box kept unchanged above the floor level as a formula every floor, It changes into the state where made the screen support vertical movement mechanism in which it rose and operated by spring, a fluid pressure cylinder, etc. collapse, and it stored, and there is also a device which makes bid up upwards from the bottom and is made to hold in the spreading state at the time of use, making a screen rewind by standup operation of a screen support vertical movement mechanism.

[0005]

[Problem(s) to be Solved by the Device]

Although the spread of the video projectors to a home is recently remarkable, since the device of the above-mentioned stationary type needs installation work and does not have the flexibility of a position substitute of a screen as a screen device used at comparatively narrow places, such as domestic sitting room, as home use, it is unsuitable.

[0006]

Although a formula has the flexibility of a position substitute of a screen by moving in a screen box every floor, the thing of the present marketing has required cost for the screen support vertical movement mechanism etc., and a difficulty is at a comparatively expensive point.

[0007]

Although this point and a tripod stand type are simple and it is easy, since the tripod made to open takes a remarkable breadth area, several 10-cm dead space also produces **** alligator ***** between the screen back and a wall surface. Since he would like to bring near a screen by a wall surface as much as possible in narrow sitting room, it is not preferred that the above-mentioned big dead space is made.

[0008]

Then, this design can be changed into a spreading state where a screen is fully brought near by a wall surface, moreover, is a structure simple as a home prevalent type, and aims at providing the projection screen device which can be mass-produced to low cost.

[0009]

[Means for Solving the Problem]

This design is a projection screen device characterized by the following composition.

[0010]

(1) the inside of a screen storage case which was oblong and used the upper surface as an opening, and this screen storage case -- a box longitudinal direction -- abbreviated -- it being provided horizontally and in the direction of screen contamination with a screen contamination axis by which rotation energization was always carried out. In a box longitudinal direction center section, a base is pivoted with an axis in a screen made to involve in this axis, and said storage case, An elastic-type screen stand which pushes down on abbreviated parallel, can rotate on said screen contamination axis in this storage case focusing on this axis, and starts and can rotate from this

storage case, Screen hanging locking member provided in a means and an upper bed part of said screen stand that a raised screen stand should stop falling Projection screen device which has and is characterized by things.

[0011]

(2) Topple a screen stand, stand with a lump posture, and between abbreviated 90 degrees of a lifting posture has the rotation flexibility centering on an axis, A projection screen device given in (1), wherein the screen stand can carry out gyrating operation in the state where it started, the screen stand failure lump side counters a stand interference member by the revolution, a stand falls and a stop is made.

[0012]

(3) A projection screen device given in (1), wherein a stand breaks down from a claw part and a crevice which were provided relatively to the stand and fixed member side being corresponded and engaged when a screen stand is raised and a stop is made.

[0013]

[Function]

When using a screen, a screen storage case is laid down and put on **** alligator *****, Break down from a means and the screen stand which pushes down and is stored in this storage case is made to be stopped by it by hand, focusing on a pivot, it starts and stopped falling, Lengthen a stand and it is set as suitable height, A screen is held at a spreading state by involving in the screen involved in and stored in the screen contamination axis, resisting the screen contamination energization torque of an axis, rewinding, hanging the upper edge part of a screen on the hanging suspending portion of a stand upper bed part, and stopping it.

[0014]

An oblong screen storage case serves as a stable plinth, and the whole device of a screen spreading state is supported above the floor level stably. And since an oblong screen storage case has small depth, the dead space between the screen of a spreading state and a wall is small, and where a screen is fully brought near by the wall side also in narrow sitting room, it can be used.

[0015]

The above is the order of a foul trick and storing of the screen after use removes a stand upper bed part screen. A screen is automatically involved in a screen contamination axis by the screen contamination energization torque of this axis, and is stored in a screen storage case. Contract the height of a screen stand, the stand by a means falls stop falling and a stop is made to cancel, and this stand is toppled by hand focusing on a pivot, and it rotates, and stores in a storage case. It is preferred to make a cover plate the top opening of a storage case, and to prevent invasion of garbage or dust. A storage case can be built, and it can also store and keep at a suitable place.

[0016]

Since this projection screen device is the composition of carrying out spreading support of the screen in an one collapsing type and elastic -type stand, it is simple for the whole

equipment configuration, and it can mass-produce it to low cost.

[0017]

[Example]

<Example 1> (drawing 1 - drawing 11)

Drawing 1 The notch rear elevation of the device at the time of a screen spreading state (at the time of screen use), The expansion cross-sectional view in which drawing 2 meets the notch rear elevation of the device at the time of a screen stand stored condition, and drawing 3 meets the (3)-(3) line of drawing 2, the expansion cross-sectional view in which drawing 4 meets the (4)-(4) line of drawing 2, and drawing 5 -- the top view of the important section at the time of a screen stand stored condition, and drawing 6 -- the top view of the important section before the stand failure stop at the time of a stand **** lifting state, and drawing 7 -- the top view of the important section of the state after a stand failure stop -- it comes out.

[0018]

1 is the oblong screen storage case which opened the upper surface wide, and the opening and closing cover board 2 is formed in a top opening.

[0019]

The oblong screen storing housing which fixed 3 in this storage case and was provided, The bearing which provided 4 and 4 in the longitudinal both ends in this housing, respectively, the screen contamination axis which made 5 support between this bearing 4.4, the screen with which the lower side side is stopped by this axis 5, and 6 is involved in this axis, the pole which provided 7 in the top chord side of this screen 6 (bar)

It comes out.

[0020]

Rotation energization of the screen contamination axis 5 is always carried out in the direction of screen contamination with the unillustrated built-in spring, and the screen 6 is held at the state where it was involved in this axis 5 like drawing 2 - drawing 4 in the free state, and was stored in the housing 3.

[0021]

By the screen 6 fully being involved in, it was caught in the screen gateway section of the narrow width of the housing 3, and will be caught by the pole 7 by the side of a screen top chord.

[0022]

The pole 7 is a round pipe of aluminum, in order to prevent the thing end of this example, the sheath member 8 for reinforcement is further attached outside the outside of this round pipe, it hangs in the center section of the longitudinal direction, and the ring 9 is attached.

[0023]

10 is the oblong screen stand storing chassis which was made parallel with the screen storing housing 3, and was fixed and provided in the storage case and which opened the upper surface wide.

[0024]

11 to the bottom face position (it corresponds to the approximately center part of the cross direction of the screen 6)

of the approximately center part of a chassis longitudinal direction in this chassis 10. The revolution seat attached to rotation freedom focusing on the vertical axis 12 and 13 are the vertical tube parts provided in the upper surface side of this revolution seat at same mind one, and this vertical tube part cuts and lacks a part of peripheral wall, and has formed the side surface opening part 14.

[0025]

15 is a screen stand and this example is a thing of the elastic type (a nesting type and telescopic) which has the main support 16 made from a square pipe material, and the auxiliary strut 17 of the drawer freedom made from square lumber inserted in this main support.

[0026]

18 is the stand base attached to the lower end of the main support 16 at one. This stand base 18 is a member of the shape of a short cylinder of the outer diameter which carries out inner fitting into the vertical tube part 13 of said revolution seat 11. The state (drawing 5) where this stand base 18 is inserted in the vertical tube part 13 of the revolution seat 11, and it moved to the side surface opening part 14 position of the vertical tube part 13 sideways centering on this horizontal axis with the horizontal axis 19, Between abbreviated 90 degrees in the state (drawing 6) where longitude was raised gives rotation flexibility, and the vertical tube part 13 is made to have connected it in the vertical tube part 13.

[0027]

Drawing 8 is an exploded perspective view of the above-mentioned revolution seat 11, the vertical axis 12, the vertical tube part 13, the side surface opening part 14, the stand base 18 of a stand lower end, and the portion of horizontal-axis 19**.

[0028]

20 is the gate type subchassis which was made to straddle above-mentioned revolution seat 11 and vertical tube part 13, and was attached to the chassis 10 at one, the field of the surface plate 21 of this subchassis 20 is made to correspond to the position of the vertical tube part 13 of the revolution seat 11, and the notch hole 22 of U type which carried out the left the opening side like drawing 5 and drawing 6 is formed in it. the path of the semicircular part of this U type notch hole 22 -- the path of the short cylinder-like stand base 18 of a stand lower end -- abbreviated -- it is made the same.

[0029]

When the revolution seat 11 is in the angle-of-rotation state facing the lefts whose side surface opening part 14 of the vertical tube part 13 abbreviated-corresponded with the opening direction of U character hole 22 for the lefts of the surface plate 21 of the above-mentioned subchassis 20, Centering on the horizontal axis 19, the stand 15 which pushes down for the lefts into the chassis 10 like drawing 2 and drawing 5, and is in a lump state is raised like two-dot chain line Shimesu of drawing 2, and drawing 6, and the rotating operation of it can be carried out. It starts conversely, and from a state, it pushes down for

the lefts and lump rotating operation can be carried out.

[0030]

If it pushes down facing the lefts, and the stand 15 starts to an abbreviated perpendicular and rotates from a lump state, The stand rotation beyond it is prevented by the outer peripheral surface part by the side of the upper bed of the short cylinder-like stand base 18 of the stand lower end which became facing up like drawing 6 being caught in contact with the semicircular part of U character hole 22 of the subchassis 20.

[0031]

In the stand ***** state of this drawing 6, the stand 15 is turned clockwise by hand and operated. this -- it turns and whole stand 15, stand base 18, horizontal-axis 19, body 13, and revolution seat 11 circle clockwise focusing on the vertical axis 12 by operation. If abbreviated 90 degrees of stands 15 are turned clockwise and operated, the stopper pin 23 implanted in the stand lower end part like drawing 7 will **** to the 1st stopper member 24 provided in the upper surface of the subchassis 20, and will be caught, it, with a top will carry out a stand time, and operation will be prevented.

[0032]

In the state of this drawing 7, it will be in the opening direction of U character hole 22 for the lefts of the 21st page of the surface plate of the subchassis 20, and the state of a 90-degree wrong direction by direction of the side surface opening part 14 being converted for before a device from for [drawing 6] the lefts by the above-mentioned abbreviated 90-degree clockwise rotation of the vertical tube part 13.

[0033]

therefore, the body centering on horizontal axis 19 of stand 15 side surface opening part 14 side -- it, and, [fall and] [lump-] That is, lump rotation is prevented by the thing ahead of [device] the stand 15 which it falls and is responded to for the upper bed side outer peripheral surface part of the stand base 18 of a stand lower end in contact with the side edge part of U character hole 22 of the subchassis 20. That is, an abbreviated perpendicular raises the stand 15 and it is held stably at a posture condition.

[0034]

In the state of drawing 7, if abbreviated 90-degree return rotating operation of the stand 15 is carried out counterclockwise conversely, like drawing 6, the stopper pin 23 will **** to the 2nd stopper member 25 provided in the upper surface of the subchassis 20, and will be caught, it, with a top will carry out a stand return time, and operation will be prevented.

[0035]

Since it is returned to the state where direction of the side surface opening part 14 of the vertical tube part 13 was in agreement with the opening direction of U character hole 22 for the lefts which is the 21st page of a surface plate of the subchassis 20 by the above-mentioned abbreviated 90-degree returning rotation of the revolution seat 11, in the state of

this drawing 6, It starts, and centering on the horizontal axis 19, in the chassis 10, the stand 15 of a state is toppled for the lefts like drawing 2 and drawing 5, and the lump rotating operation of it can be carried out. In drawing 2, 26 is a cushioning rubber seat which catches the tip side of the stand 15 toppled into the chassis 10.

[0036]

Drawing 9 - drawing 11 explain the stopper mechanism of the auxiliary strut 17 to the main support 16 of the stand 15. In drawing 9, 27 is a STOP lever, and this STOP lever 27 has formed the square wheel plate 28 in one at the lever tip side, as shown in the perspective view of drawing 11. the inner shape of the main support 16 of the product [outside / of this wheel plate 28] made from a square pipe material -- mist and eye small ** -- ** -- it is -- the inner shape (hole form) is made mist and more oversized than the outside of the auxiliary strut 17 made from square lumber.

[0037]

This STOP lever 27 drops the successive formation neck 27a of a lever part and a wheel plate part into the notching hole formed in the one side face of the upper bed part of the main support 16, makes a wheel plate part insert in the main support 16, carries out a lever part outside, and is made engaged. The auxiliary strut 17 is inserted in the main support 16 through the inside of the wheel plate 28. 29 is attached in the upper bed part of the main support 16, and is the cap member carried out screw clamp 30. The successive formation neck 27a of the lever part of STOP lever 27 and a wheel plate part is pressed down from a top by this cap member 29, and it separates, and is stopped and carried out, and STOP lever 27 is rocking freedom focusing on this successive formation neck 27a.

[0038]

31 is the flat spring which inserted the tip side in the main support 16 from the slit hole formed in the wall surface of the main support 16, and is stretched between the side of the auxiliary strut 17 in the main support 16, and the rear face of the lever 27.

[0039]

Rotational energization of STOP lever 27 is always carried out to the drawing 9 top counterclockwise rotation by the prop power of this flat spring 31 the center [the successive formation neck 27a]. The wheel plate 28 inclines to the left going down like drawing 9 by this, and inner shape front side edge part and back neighborhood edge part press against the front wall surface part and posterior-wall-of-stomach surface part of the auxiliary strut 17. Shearing going down into the main support 16 of the auxiliary strut 17 is prevented by frictional force per the aggressiveness. Since the direction of the load is a direction which inclines the wheel plate 28 to the left going down further even if big depression load is added to the auxiliary strut 17, It becomes large in power per [to the front wall surface part and posterior-wall-of-stomach surface part of the auxiliary strut 17 of the inner shape front side edge part of the wheel plate 28,

and a back neighborhood edge part] aggressiveness, and shearing going down into the main support 16 of the auxiliary strut 17 is prevented stably.

[0040]

If it is made to rotate clockwise focusing on the successive formation neck 27a until it resists the flat spring 31, it pushes STOP lever 27 like drawing 10 in the auxiliary strut stop state of drawing 9 and the tip of the wheel plate 28 is caught by the stopper screw thread 32, In this state, since the wheel plate 28 becomes an abbreviated horizontal position and per [to the inner shape front side edge part of the wheel plate 28, the front wall surface part of the auxiliary strut 17 of a back neighborhood edge part, and a posterior-wall-of-stomach surface part] aggressiveness is lost, the stop state of the auxiliary strut 17 is canceled. Therefore, the drawer operation out of the main support 16 of the auxiliary strut 17 and pushing operation become free.

[0041]

If the suitable length drawer of the auxiliary strut 17 is carried out from the main support 16 and its hand of STOP lever 27 is released, since a stop will start the auxiliary strut 17 by the principle explained by drawing 9, the amount of drawers from the main support 16 of the auxiliary strut 17, i.e., the height of the stand 15, can be adjusted without going through stages.

[0042]

Drawing 2 pushes down 33, according to a lump stored condition, it is the hook member for screen ***** credit stops provided in the upper bed of the auxiliary strut 17, and it becomes [it is a flat position, and drawing 1 stands it, and] a lifting and the posture which turned to the device front stop falling in the state.

[0043]

In the screen stand stored condition of drawing 2, where it pushed in the auxiliary strut 17 in the main support 16 and the whole length (height) is shortened, the stand 15 is toppled, and is been [the stand / it] crowded and stored.

[0044]

The storage case 1 is laid down and put on **** alligator ***** at the time of use. The screen housing 3 side in the storage case 1 becomes the device front side. The cover plate 2 is opened, the stand 15 is raised centering on the horizontal axis 19 (two-dot chain line Shimesu of drawing 2, drawing 6), and, subsequently 90 degrees of the stand 15 is rotated clockwise (drawing 7). The stand 15 which this raised falls stably, and is stopped and carried out.

[0045]

After pushing STOP lever 27, canceling the stop state of the auxiliary strut 17 of the stand 15, pulling out the auxiliary strut 17 out of the main support 16 and adjusting the whole stand 15 height suitably, the auxiliary strut 17 is made to hold in the stop state by releasing one's hand of STOP lever 27.

[0046]

Grasp the pole 7 by the side of the top chord, resist the screen

contamination energizing force of the axis 5, the screen 6 involved in and stored in the screen housing 3 is made to rewind from the axis 5, it pulls up, the center section of the pole 7 hangs, the ring 9 is hooked on the hook member 33 by the side of the upper bed of the auxiliary strut 17, and the pole 7 is stopped. Thereby, the screen 6 is held like drawing 1 at a spreading state.

[0047]

After use is a procedure contrary to the above, hang it, it removes the ring 9 from the hook member 33, makes the screen 6 involve in the axis 5 by the contamination power of the axis 5, and is made to store in the screen housing 3.

[0048]

Push STOP lever 27, cancel the stop state of the auxiliary strut 17 of the stand 15, push in the auxiliary strut 17 into the main support 16, and the whole stand 15 height is shortened, It breaks down from carrying out returning rotation of this stand 15 to a 90-degree counterclockwise rotation, a stop is canceled (drawing 6), and it pushes down to a left centering on the horizontal axis 19, and is made a stored condition into the chassis 10 (drawing 2). The cover plate 2 is made the top opening of the storage case 1, and invasion of garbage or dust is prevented. The storage case 1 can be built, and it can store and keep at a suitable place.

[0049]

<Example 2> (drawing 12 - drawing 15)

This examples are other examples of a means that the stand 15 should stop collapsing - Falling.

[0050]

In drawing 12, 41 and 43 are the attachment plinths of the couple which made the vertical plate sections 42 and 44 provide, respectively, they are made to counter the bottom in the storage case 1, and fixed allocation has been carried out.

[0051]

It is the shaft insertion hole which made 45 and 47 counter inside each vertical plate sections 42 and 44 of the attachment plinths 41 and 43 of the above-mentioned couple, and the bearing plate of the couple fixed and provided, and 46 and 48 were made to counter each of these bearing plates 45 and 47, and was provided.

[0052]

The opposite 2 side of the lower end part of the main support 16 of the stand 15 is made to possess the shaft insertion holes 49 and 50, The lower end part of this main support 16 is located among the bearing plates 45 and 47 of the above-mentioned couple, the shaft insertion hole 46 of the bearing plate 45, the shaft insertion holes 49 and 50 of the main support 16, and the shaft insertion hole 48 of the bearing plate 47 are coincided, the bolt shaft 51 is inserted in, with the nut 52, it binds tight suitably and a slip off stop is carried out. Therefore, the main support 16 of the stand 15 is supported by collapsing rotation freedom focusing on the axis 51 among the bearing plates 45 and 47.

[0053]

53 is the up-and-down motion piece member made to insert in the

lower end circles of the main support 16 of the stand 15. 54 is the sliding direction long hole provided in the side wall part of this piece member, and the aforementioned axis 51 has penetrated this long hole 54, and the piece member 53 is movable [the axis] in the inside of the main support 16 to a sliding direction, without being interfered by this axis 51. 55 is the coil spring which ****(ed) between the inner surface of the ceiling surface board 56 of the piece member 53, and the axis 51, and move energization of the piece member 53 is always carried out in the raising direction in the inside of the main support 16 by this coil spring 55. 57 is the method bending claw part of outside provided in the lower end of the piece member 53.

[0054]

Drawing 15 is an exploded perspective view of the above-mentioned bearing plates 45 and 47, the lower end part of the main support 16, the up-and-down motion piece member 53, and the portion of coil spring 55**.

[0055]

The stand 15 stands drawing 12 and a part of vertical section side view at the time of a lifting state and drawing 13 are notch rear elevations. It is in the state where the way bending claw part 57 fell and engaged with the engaging recess 58 provided in the lower edge part of the bearing plate 45 outside the lower end of the piece member 53 by which raising move energization is always carried out with the coil spring 55 in this stand **** lifting state, Rotation centering on the axis 51 of the stand 15 is prevented by engagement to this claw part 57 and crevice 58. That is, it stands, the stand 15 of a lifting state falls, and the stop is made.

[0056]

spreading operation of a screen -- the thing of said Example 1 -- it is the same. Namely, stand as mentioned above, and push STOP lever 27 and a lifting and the stop state of the auxiliary strut 17 of the stand 15 which fall, stops, carries out and states include are canceled (drawing 10), After pulling out the auxiliary strut 17 out of the main support 16 and adjusting the whole stand 15 height suitably, the auxiliary strut 17 is made to hold in the stop state by lifting a hand from STOP lever 27. Grasp the pole 7 by the side of the top chord, resist the screen contamination energizing force of the axis 5, the screen 6 involved in and stored in the screen housing 3 is made to rewind from the axis 5, it pulls up, the center section of the pole 7 hangs, the ring 9 is hooked on the hook member 33 of the upper bed part of the auxiliary strut 17, and the pole 7 is stopped. Thereby, the screen 6 is held like drawing 1 at a spreading state.

[0057]

After use is a procedure contrary to the above, hang it, it removes the ring 9 from the hook member 33, makes a screen involve in the axis 5 by the contamination power of the axis 5, and is made to store in the screen housing 3.

[0058]

STOP lever 27 is pushed, the stop state of the auxiliary strut 17 of the stand 15 is canceled, and the auxiliary strut 17 is pushed

in into the main support 16. If the coil spring 55 is resisted further and depressing operation of the auxiliary strut 17 is carried out like drawing 14 even after the lower end of the auxiliary strut 17 hits the ceiling surface board 56 of said piece member 53, The piece member 53 is depressed below, the claw part 57 falls, it escapes from the crevice 58 of the lower edge part of the bearing plate 45, and engagement to the claw part 57 and the crevice 58 separates (the state of drawing 14, the condition of two-dot chain line Shimesu of drawing 12).

[0059]

It is possible to topple the stand 15 to the drawing 12 top counterclockwise rotation focusing on the axis 51, and to rotate in this engagement blank state (condition of two-dot chain line Shimesu of drawing 13), and it is made to the stored condition which toppled [focusing on the axis 51] the stand 15 for the lefts like drawing 2 into the storage case 1.

[0060]

In drawing 12 and drawing 15, 45a is an arc-guides part about the claw part 57 of said piece member 53 formed in the bearing plate 45, and the above-mentioned claw part 57 slides along with this arc-guides part at the time of the collapsing rotation process of the stand 15.

[0061]

If the stand 15 is raised focusing on the axis 51, it rotates in the stand derrick-down lump condition of two-dot chain line Shimesu of drawing 13 and the stand 15 is raised to an abbreviated perpendicular, The claw part 57 of the piece member 53 falls like drawing 12 and drawing 13 in the crevice 58 of the lower edge part of the bearing plate 45, the stand 15 raised as the claw part 57 and the crevice 58 will be in an engagement state and it mentioned above falls, and a stop is made automatically.

[0062]

[Effect of the Device]

as mentioned above, the projection screen device of this design is a thing of composition of that it can change into a spreading state where a screen is fully brought near by a wall surface, and it can moreover mass-produce to low cost with a simple structure, and, for example moreover, is effective as a device of a home prevalent type -- it is suitable.

TECHNICAL FIELD

[Industrial Application]

This design is related with the projection screen device of projection system apparatus, such as a video projector, a movie projector, and a slide projector.

PRIOR ART

[Description of the Prior Art]

There is a tripod stand type as a simple projection screen device. This hangs a screen to a tripod stand, makes it carry out

spreading support, and is mostly used for it at a school, a home, etc.

[0003]

Carrying out fixed allocation of the screen box in the ceiling part and wall surface which carried out location beforehand, the time of non-use makes a screen involve in in the screen box, is made to store, rewinds a screen at the time of use, and also has a device of the electric type of a stationary type, or a hand mold made into hanging state voice.

[0004]

The time of non-use makes a screen involve in in the screen box kept unchanged above the floor level as a formula every floor, It changes into the state where made the screen support vertical movement mechanism in which it rose and operated by spring, a fluid pressure cylinder, etc. collapse, and it stored, and there is also a device which makes bid up upwards from the bottom and is made to hold in the spreading state at the time of use, making a screen rewind by standup operation of a screen support vertical movement mechanism.

EFFECT OF THE INVENTION

[Effect of the Device]

as mentioned above, the projection screen device of this design is a thing of composition of that it can change into a spreading state where a screen is fully brought near by a wall surface, and it can moreover mass-produce to low cost with a simple structure, and, for example moreover, is effective as a device of a home prevalent type -- it is suitable.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Device]

Although the spread of the video projectors to a home is recently remarkable, since the device of the above-mentioned stationary type needs installation work and does not have the flexibility of a position substitute of a screen as a screen device used at comparatively narrow places, such as domestic sitting room, as home use, it is unsuitable.

[0006]

Although a formula has the flexibility of a position substitute of a screen by moving in a screen box every floor, the thing of the present marketing has required cost for the screen support vertical movement mechanism etc., and a difficulty is at a comparatively expensive point.

[0007]

Although this point and a tripod stand type are simple and it is easy, since the tripod made to open takes a remarkable breadth area, several 10-cm dead space also produces **** alligator ***** between the screen back and a wall surface. Since he would like to bring near a screen by a wall surface as much as possible in narrow sitting room, it is not preferred that the above-mentioned big dead space is made.

[0008]

Then, this design can be changed into a spreading state where a screen is fully brought near by a wall surface, moreover, is a structure simple as a home prevalent type, and aims at providing the projection screen device which can be mass-produced to low cost.

MEANS

[Means for Solving the Problem]

This design is a projection screen device characterized by the following composition.

[0010]

(1) the inside of a screen storage case which was oblong and used the upper surface as an opening, and this screen storage case -- a box longitudinal direction -- abbreviated -- it being provided horizontally and in the direction of screen contamination with a screen contamination axis by which rotation energization was always carried out. In a box longitudinal direction center section, a base is pivoted with an axis in a screen made to involve in this axis, and said storage case, An elastic-type screen stand which pushes down on abbreviated parallel, can rotate on said screen contamination axis in this storage case focusing on this axis, and starts and can rotate from this storage case, Screen hanging locking member provided in a means and an upper bed part of said screen stand that a raised screen stand should stop falling Projection screen device which has and is characterized by things.

[0011]

(2) Topple a screen stand, stand with a lump posture, and between abbreviated 90 degrees of a lifting posture has the rotation flexibility centering on an axis, A projection screen device given in (1), wherein the screen stand can carry out gyrating operation in the state where it started, the screen stand failure lump side counters a stand interference member by the revolution, a stand falls and a stop is made.

[0012]

(3) A projection screen device given in (1), wherein a stand breaks down from a claw part and a crevice which were provided relatively to the stand and fixed member side being corresponded and engaged when a screen stand is raised and a stop is made.

OPERATION

[Function]

When using a screen, a screen storage case is laid down and put on **** alligator *****, Break down from a means and the screen stand which pushes down and is stored in this storage case is made to be stopped by it by hand, focusing on a pivot, it starts and stopped falling, Lengthen a stand and it is set as suitable height, A screen is held at a spreading state by involving in the screen involved in and stored in the screen contamination axis, resisting the screen contamination

energization torque of an axis, rewinding, hanging the upper edge part of a screen on the hanging suspending portion of a stand upper bed part, and stopping it.

[0014]

An oblong screen storage case serves as a stable plinth, and the whole device of a screen spreading state is supported above the floor level stably. And since an oblong screen storage case has small depth, the dead space between the screen of a spreading state and a wall is small, and where a screen is fully brought near by the wall side also in narrow sitting room, it can be used.

[0015]

The above is the order of a foul trick and storing of the screen after use removes a stand upper bed part screen. A screen is automatically involved in a screen contamination axis by the screen contamination energization torque of this axis, and is stored in a screen storage case. Contract the height of a screen stand, the stand by a means falls stop falling and a stop is made to cancel, and this stand is toppled by hand focusing on a pivot, and it rotates, and stores in a storage case. It is preferred to make a cover plate the top opening of a storage case, and to prevent invasion of garbage or dust. A storage case can be built, and it can also store and keep at a suitable place.

[0016]

Since this projection screen device is the composition of carrying out spreading support of the screen in an one collapsing type and elastic -type stand, it is simple for the whole equipment configuration, and it can mass-produce it to low cost.

EXAMPLE

[Example]

<example 1> (drawing 1 - drawing 11)

Drawing 1 The notch rear elevation of the device at the time of a screen spreading state (at the time of screen use), The expansion cross-sectional view in which drawing 2 meets the notch rear elevation of the device at the time of a screen stand stored condition, and drawing 3 meets the (3)-(3) line of drawing 2, the expansion cross-sectional view in which drawing 4 meets the (4)-(4) line of drawing 2, and drawing 5 -- the top view of the important section at the time of a screen stand stored condition, and drawing 6 -- the top view of the important section before the stand failure stop at the time of a stand **** lifting state, and drawing 7 -- the top view of the important section of the state after a stand failure stop -- it comes out.

[0018]

1 is the oblong screen storage case which opened the upper surface wide, and the opening and closing cover board 2 is formed in a top opening.

[0019]

The oblong screen storing housing which fixed 3 in this storage case and was provided, The bearing which provided 4 and 4 in the longitudinal both ends in this housing, respectively, the screen contamination axis which made 5 support between this bearing 4.4,

the screen with which the lower side side is stopped by this axis 5, and 6 is involved in this axis, the pole which provided 7 in the top chord side of this screen 6 (bar)

It comes out.

[0020]

Rotation energization of the screen contamination axis 5 is always carried out in the direction of screen contamination with the unillustrated built-in spring, and the screen 6 is held at the state where it was involved in this axis 5 like drawing 2 - drawing 4 in the free state, and was stored in the housing 3.

[0021]

By the screen 6 fully being involved in, it was caught in the screen gateway section of the narrow width of the housing 3, and will be caught by the pole 7 by the side of a screen top chord.

[0022]

The pole 7 is a round pipe of aluminum, in order to prevent the thing end of this example, the sheath member 8 for reinforcement is further attached outside the outside of this round pipe, it hangs in the center section of the longitudinal direction, and the ring 9 is attached.

[0023]

10 is the oblong screen stand storing chassis which was made parallel with the screen storing housing 3, and was fixed and provided in the storage case and which opened the upper surface wide.

[0024]

11 to the bottom face position (it corresponds to the approximately center part of the cross direction of the screen 6) of the approximately center part of a chassis longitudinal direction in this chassis 10. The revolution seat attached to rotation freedom focusing on the vertical axis 12 and 13 are the vertical tube parts provided in the upper surface side of this revolution seat at same mind one, and this vertical tube part cuts and lacks a part of peripheral wall, and has formed the side surface opening part 14.

[0025]

15 is a screen stand and this example is a thing of the elastic type (a nesting type and telescopic) which has the main support 16 made from a square pipe material, and the auxiliary strut 17 of the drawer freedom made from square lumber inserted in this main support.

[0026]

18 is the stand base attached to the lower end of the main support 16 at one. This stand base 18 is a member of the shape of a short cylinder of the outer diameter which carries out inner fitting into the vertical tube part 13 of said revolution seat 11. The state (drawing 5) where this stand base 18 is inserted in the vertical tube part 13 of the revolution seat 11, and it moved to the side surface opening part 14 position of the vertical tube part 13 sideways centering on this horizontal axis with the horizontal axis 19, Between abbreviated 90 degrees in the state (drawing 6) where longitude was raised gives rotation flexibility, and the vertical tube part 13 is made to have connected it in the

vertical tube part 13.

[0027]

Drawing 8 is an exploded perspective view of the above-mentioned revolution seat 11, the vertical axis 12, the vertical tube part 13, the side surface opening part 14, the stand base 18 of a stand lower end, and the portion of horizontal-axis 19**.

[0028]

20 is the gate type subchassis which was made to straddle above-mentioned revolution seat 11 and vertical tube part 13, and was attached to the chassis 10 at one, the field of the surface plate 21 of this subchassis 20 is made to correspond to the position of the vertical tube part 13 of the revolution seat 11, and the notch hole 22 of U type which carried out the left the opening side like drawing 5 and drawing 6 is formed in it. the path of the semicircular part of this U type notch hole 22 -- the path of the short cylinder-like stand base 18 of a stand lower end -- abbreviated -- it is made the same.

[0029]

When the revolution seat 11 is in the angle-of-rotation state facing the lefts whose side surface opening part 14 of the vertical tube part 13 abbreviated-corresponded with the opening direction of U character hole 22 for the lefts of the surface plate 21 of the above-mentioned subchassis 20, Centering on the horizontal axis 19, the stand 15 which pushes down for the lefts into the chassis 10 like drawing 2 and drawing 5, and is in a lump state is raised like two-dot chain line Shimesu of drawing 2, and drawing 6, and the rotating operation of it can be carried out. It starts conversely, and from a state, it pushes down for the lefts and lump rotating operation can be carried out.

[0030]

If it pushes down facing the lefts, and the stand 15 starts to an abbreviated perpendicular and rotates from a lump state, The stand rotation beyond it is prevented by the outer peripheral surface part by the side of the upper bed of the short cylinder-like stand base 18 of the stand lower end which became facing up like drawing 6 being caught in contact with the semicircular part of U character hole 22 of the subchassis 20.

[0031]

In the stand ***** state of this drawing 6, the stand 15 is turned clockwise by hand and operated. this -- it turns and whole stand 15, stand base 18, horizontal-axis 19, body 13, and revolution seat 11 circle clockwise focusing on the vertical axis 12 by operation. If abbreviated 90 degrees of stands 15 are turned clockwise and operated, the stopper pin 23 implanted in the stand lower end part like drawing 7 will **** to the 1st stopper member 24 provided in the upper surface of the subchassis 20, and will be caught, it, with a top will carry out a stand time, and operation will be prevented.

[0032]

In the state of this drawing 7, it will be in the opening direction of U character hole 22 for the lefts of the 21st page of the surface plate of the subchassis 20, and the state of a 90-degree wrong direction by direction of the side surface opening

part 14 being converted for before a device from for [drawing 6] the lefts by the above-mentioned abbreviated 90-degree clockwise rotation of the vertical tube part 13.

[0033]

therefore, the body centering on horizontal axis 19 of stand 15 side surface opening part 14 side -- it, and, [fall and] [lump-] That is, lump rotation is prevented by the thing ahead of [device] the stand 15 which it falls and is responded to for the upper bed side outer peripheral surface part of the stand base 18 of a stand lower end in contact with the side edge part of U character hole 22 of the subchassis 20. That is, an abbreviated perpendicular raises the stand 15 and it is held stably at a posture condition.

[0034]

In the state of drawing 7, if abbreviated 90-degree return rotating operation of the stand 15 is carried out counterclockwise conversely, like drawing 6, the stopper pin 23 will **** to the 2nd stopper member 25 provided in the upper surface of the subchassis 20, and will be caught, it, with a top will carry out a stand return time, and operation will be prevented.

[0035]

Since it is returned to the state where direction of the side surface opening part 14 of the vertical tube part 13 was in agreement with the opening direction of U character hole 22 for the lefts which is the 21st page of a surface plate of the subchassis 20 by the above-mentioned abbreviated 90-degree returning rotation of the revolution seat 11, in the state of this drawing 6, It starts, and centering on the horizontal axis 19, in the chassis 10, the stand 15 of a state is toppled for the lefts like drawing 2 and drawing 5, and the lump rotating operation of it can be carried out. In drawing 2, 26 is a cushioning rubber seat which catches the tip side of the stand 15 toppled into the chassis 10.

[0036]

Drawing 9 - drawing 11 explain the stopper mechanism of the auxiliary strut 17 to the main support 16 of the stand 15. In drawing 9, 27 is a STOP lever, and this STOP lever 27 has formed the square wheel plate 28 in one at the lever tip side, as shown in the perspective view of drawing 11. the inner shape of the main support 16 of the product [outside / of this wheel plate 28] made from a square pipe material -- mist and eye small ** -- ** -- it is -- the inner shape (hole form) is made mist and more oversized than the outside of the auxiliary strut 17 made from square lumber.

[0037]

This STOP lever 27 drops the successive formation neck 27a of a lever part and a wheel plate part into the notching hole formed in the one side face of the upper bed part of the main support 16, makes a wheel plate part insert in the main support 16, carries out a lever part outside, and is made engaged. The auxiliary strut 17 is inserted in the main support 16 through the inside of the wheel plate 28. 29 is attached in the upper bed part of the

main support 16, and is the cap member carried out screw clamp 30. The successive formation neck 27a of the lever part of STOP lever 27 and a wheel plate part is pressed down from a top by this cap member 29, and it separates, and is stopped and carried out, and STOP lever 27 is rocking freedom focusing on this successive formation neck 27a.

[0038]

31 is the flat spring which inserted the tip side in the main support 16 from the slit hole formed in the wall surface of the main support 16, and is stretched between the side of the auxiliary strut 17 in the main support 16, and the rear face of the lever 27.

[0039]

Rotational energization of STOP lever 27 is always carried out to the drawing 9 top counterclockwise rotation by the prop power of this flat spring 31 the center [the successive formation neck 27a]. The wheel plate 28 inclines to the left going down like drawing 9 by this, and inner shape front side edge part and back neighborhood edge part press against the front wall surface part and posterior-wall-of-stomach surface part of the auxiliary strut 17. Shearing going down into the main support 16 of the auxiliary strut 17 is prevented by frictional force per the aggressiveness. Since the direction of the load is a direction which inclines the wheel plate 28 to the left going down further even if big depression load is added to the auxiliary strut 17, It becomes large in power per [to the front wall surface part and posterior-wall-of-stomach surface part of the auxiliary strut 17 of the inner shape front side edge part of the wheel plate 28, and a back neighborhood edge part] aggressiveness, and shearing going down into the main support 16 of the auxiliary strut 17 is prevented stably.

[0040]

If it is made to rotate clockwise focusing on the successive formation neck 27a until it resists the flat spring 31, it pushes STOP lever 27 like drawing 10 in the auxiliary strut stop state of drawing 9 and the tip of the wheel plate 28 is caught by the stopper screw thread 32, In this state, since the wheel plate 28 becomes an abbreviated horizontal position and per [to the inner shape front side edge part of the wheel plate 28, the front wall surface part of the auxiliary strut 17 of a back neighborhood edge part, and a posterior-wall-of-stomach surface part] aggressiveness is lost, the stop state of the auxiliary strut 17 is canceled. Therefore, the drawer operation out of the main support 16 of the auxiliary strut 17 and pushing operation become free.

[0041]

If the suitable length drawer of the auxiliary strut 17 is carried out from the main support 16 and its hand of STOP lever 27 is released, since a stop will start the auxiliary strut 17 by the principle explained by drawing 9, the amount of drawers from the main support 16 of the auxiliary strut 17, i.e., the height of the stand 15, can be adjusted without going through stages.

[0042]

Drawing 2 pushes down 33, according to a lump stored condition, it is the hook member for screen ***** credit stops provided in the upper bed of the auxiliary strut 17, and it becomes [it is a flat position, and drawing 1 stands it, and] a lifting and the posture which turned to the device front stop falling in the state.

[0043]

In the screen stand stored condition of drawing 2, where it pushed in the auxiliary strut 17 in the main support 16 and the whole length (height) is shortened, the stand 15 is toppled, and is been [the stand / it] crowded and stored.

[0044]

The storage case 1 is laid down and put on **** alligator ***** at the time of use. The screen housing 3 side in the storage case 1 becomes the device front side. The cover plate 2 is opened, the stand 15 is raised centering on the horizontal axis 19 (two-dot chain line Shimesu of drawing 2, drawing 6), and, subsequently 90 degrees of the stand 15 is rotated clockwise (drawing 7). The stand 15 which this raised falls stably, and is stopped and carried out.

[0045]

After pushing STOP lever 27, canceling the stop state of the auxiliary strut 17 of the stand 15, pulling out the auxiliary strut 17 out of the main support 16 and adjusting the whole stand 15 height suitably, the auxiliary strut 17 is made to hold in the stop state by releasing one's hand of STOP lever 27.

[0046]

Grasp the pole 7 by the side of the top chord, resist the screen contamination energizing force of the axis 5, the screen 6 involved in and stored in the screen housing 3 is made to rewind from the axis 5, it pulls up, the center section of the pole 7 hangs, the ring 9 is hooked on the hook member 33 by the side of the upper bed of the auxiliary strut 17, and the pole 7 is stopped. Thereby, the screen 6 is held like drawing 1 at a spreading state.

[0047]

After use is a procedure contrary to the above, hang it, it removes the ring 9 from the hook member 33, makes the screen 6 involve in the axis 5 by the contamination power of the axis 5, and is made to store in the screen housing 3.

[0048]

Push STOP lever 27, cancel the stop state of the auxiliary strut 17 of the stand 15, push in the auxiliary strut 17 into the main support 16, and the whole stand 15 height is shortened, It breaks down from carrying out returning rotation of this stand 15 to a 90-degree counterclockwise rotation, a stop is canceled (drawing 6), and it pushes down to a left centering on the horizontal axis 19, and is made a stored condition into the chassis 10 (drawing 2). The cover plate 2 is made the top opening of the storage case 1, and invasion of garbage or dust is prevented. The storage case 1 can be built, and it can store and keep at a suitable place.

[0049]

<example 2> (drawing 12 - drawing 15)

This examples are other examples of a means that the stand 15 should stop collapsing - Falling.

[0050]

In drawing 12, 41 and 43 are the attachment plinths of the couple which made the vertical plate sections 42 and 44 provide, respectively, they are made to counter the bottom in the storage case 1, and fixed allocation has been carried out.

[0051]

It is the shaft insertion hole which made 45 and 47 counter inside each vertical plate sections 42 and 44 of the attachment plinths 41 and 43 of the above-mentioned couple, and the bearing plate of the couple fixed and provided, and 46 and 48 were made to counter each of these bearing plates 45 and 47, and was provided.

[0052]

The opposite 2 side of the lower end part of the main support 16 of the stand 15 is made to possess the shaft insertion holes 49 and 50, The lower end part of this main support 16 is located among the bearing plates 45 and 47 of the above-mentioned couple, the shaft insertion hole 46 of the bearing plate 45, the shaft insertion holes 49 and 50 of the main support 16, and the shaft insertion hole 48 of the bearing plate 47 are coincided, the bolt shaft 51 is inserted in, with the nut 52, it binds tight suitably and a slip off stop is carried out. Therefore, the main support 16 of the stand 15 is supported by collapsing rotation freedom focusing on the axis 51 among the bearing plates 45 and 47.

[0053]

53 is the up-and-down motion piece member made to insert in the lower end circles of the main support 16 of the stand 15. 54 is the sliding direction long hole provided in the side wall part of this piece member, and the aforementioned axis 51 has penetrated this long hole 54, and the piece member 53 is movable [the axis] in the inside of the main support 16 to a sliding direction, without being interfered by this axis 51. 55 is the coil spring which ****(ed) between the inner surface of the ceiling surface board 56 of the piece member 53, and the axis 51, and move energization of the piece member 53 is always carried out in the raising direction in the inside of the main support 16 by this coil spring 55. 57 is the method bending claw part of outside provided in the lower end of the piece member 53.

[0054]

Drawing 15 is an exploded perspective view of the above-mentioned bearing plates 45 and 47, the lower end part of the main support 16, the up-and-down motion piece member 53, and the portion of coil spring 55**.

[0055]

The stand 15 stands drawing 12 and a part of vertical section side view at the time of a lifting state and drawing 13 are notch rear elevations. It is in the state where the way bending claw part 57 fell and engaged with the engaging recess 58 provided in the lower edge part of the bearing plate 45 outside the lower end of the piece member 53 by which raising move energization is always carried out with the coil spring 55 in this stand ****

lifting state, Rotation centering on the axis 51 of the stand 15 is prevented by engagement to this claw part 57 and crevice 58. That is, it stands, the stand 15 of a lifting state falls, and the stop is made.

[0056]

spreading operation of a screen -- the thing of said Example 1 -- it is the same. Namely, stand as mentioned above, and push STOP lever 27 and a lifting and the stop state of the auxiliary strut 17 of the stand 15 which fall, stops, carries out and states include are canceled (drawing 10), After pulling out the auxiliary strut 17 out of the main support 16 and adjusting the whole stand 15 height suitably, the auxiliary strut 17 is made to hold in the stop state by lifting a hand from STOP lever 27. Grasp the pole 7 by the side of the top chord, resist the screen contamination energizing force of the axis 5, the screen 6 involved in and stored in the screen housing 3 is made to rewind from the axis 5, it pulls up, the center section of the pole 7 hangs, the ring 9 is hooked on the hook member 33 of the upper bed part of the auxiliary strut 17, and the pole 7 is stopped. Thereby, the screen 6 is held like drawing 1 at a spreading state.

[0057]

After use is a procedure contrary to the above, hang it, it removes the ring 9 from the hook member 33, makes a screen involve in the axis 5 by the contamination power of the axis 5, and is made to store in the screen housing 3.

[0058]

STOP lever 27 is pushed, the stop state of the auxiliary strut 17 of the stand 15 is canceled, and the auxiliary strut 17 is pushed in into the main support 16. If the coil spring 55 is resisted further and depressing operation of the auxiliary strut 17 is carried out like drawing 14 even after the lower end of the auxiliary strut 17 hits the ceiling surface board 56 of said piece member 53, The piece member 53 is depressed below, the claw part 57 falls, it escapes from the crevice 58 of the lower edge part of the bearing plate 45, and engagement to the claw part 57 and the crevice 58 separates (the state of drawing 14, the condition of two-dot chain line Shimesu of drawing 12).

[0059]

It is possible to topple the stand 15 to the drawing 12 top counterclockwise rotation focusing on the axis 51, and to rotate in this engagement blank state (condition of two-dot chain line Shimesu of drawing 13), and it is made to the stored condition which toppled [focusing on the axis 51] the stand 15 for the lefts like drawing 2 into the storage case 1.

[0060]

In drawing 12 and drawing 15, 45a is an arc-guides part about the claw part 57 of said piece member 53 formed in the bearing plate 45, and the above-mentioned claw part 57 slides along with this arc-guides part at the time of the collapsing rotation process of the stand 15.

[0061]

If the stand 15 is raised focusing on the axis 51, it rotates in the stand derrick-down lump condition of two-dot chain line

Shimesu of drawing 13 and the stand 15 is raised to an abbreviated perpendicular, The claw part 57 of the piece member 53 falls like drawing 12 and drawing 13 in the crevice 58 of the lower edge part of the bearing plate 45, the stand 15 raised as the claw part 57 and the crevice 58 will be in an engagement state and it mentioned above falls, and a stop is made automatically.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The notch rear elevation at the time of the screen spreading state of the 1st example device (at the time of use)

[Drawing 2]The notch rear elevation at the time of a screen stand stored condition

[Drawing 3]The cross-sectional view which meets the (3)-(3) line of drawing 2

[Drawing 4]The cross-sectional view which meets the (4)-(4) line of drawing 2

[Drawing 5]The top view of the important section at the time of a screen stand stored condition

[Drawing 6]The top view of the important section before the stand failure stop at the time of a stand **** lifting state

[Drawing 7]The top view of the important section of a stand failure stop state

[Drawing 8]The exploded perspective view of an important section

[Drawing 9]Drawing of longitudinal section of the auxiliary strut stopper mechanism part of a stand (at the time of a stop state)

[Drawing 10]drawing of longitudinal section (at the time of a stop released state) of the auxiliary strut stopper mechanism part of a stand

[Drawing 11]The perspective view of a STOP lever

[Drawing 12]The vertical section side view of the important section at the time of the stand **** lifting state of the 2nd example device

[Drawing 13]The partial notch rear elevation of the important section at the time of a stand **** lifting state

[Drawing 14]The vertical section side view of the important section at the time of a stand failure stop released state

[Drawing 15]The exploded perspective view of an important section

[Description of Notations]

1 Screen stand storage case

3 Screen storing housing

5 Screen contamination axis

6 Screen

9 Screen *****

15 An elastic-type screen stand

16 Main support

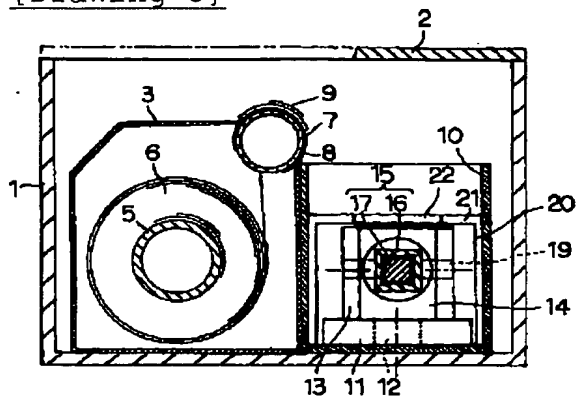
17 Auxiliary strut

27 Auxiliary strut stop stop release lever

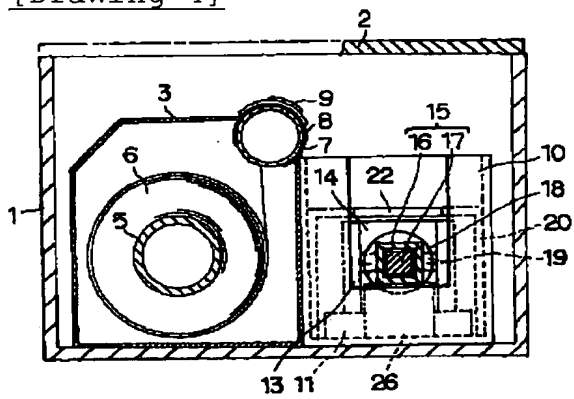
33 The hook member for screen ***** credit stops

DRAWINGS

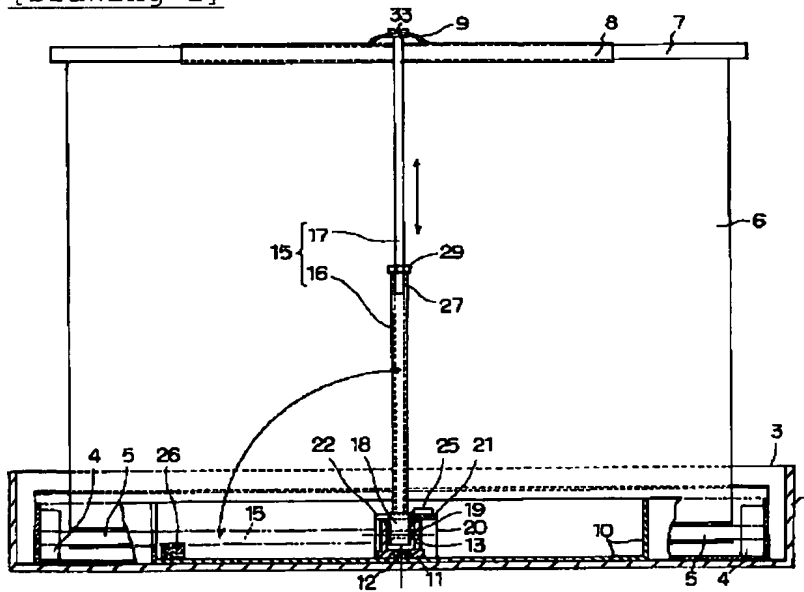
[Drawing 3]



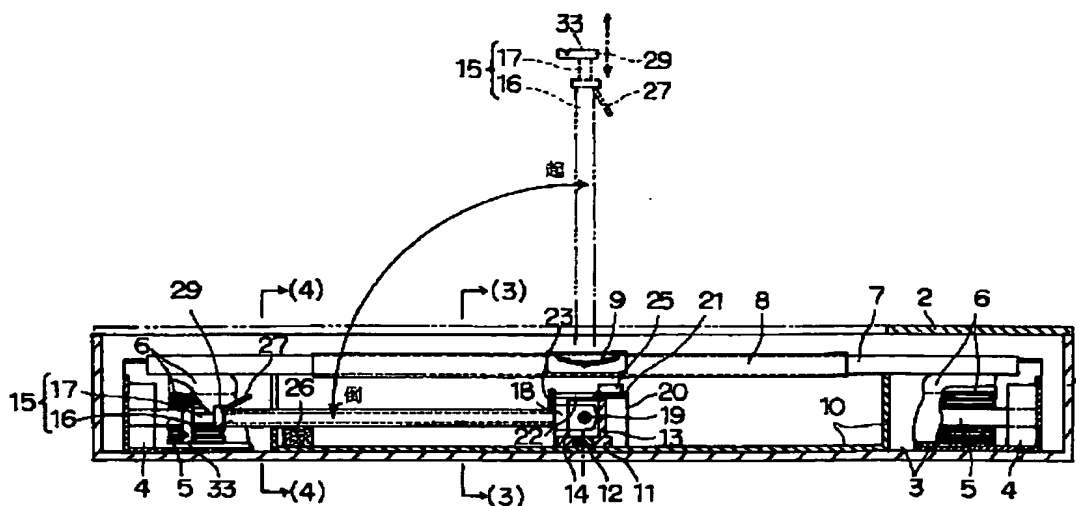
[Drawing 4]



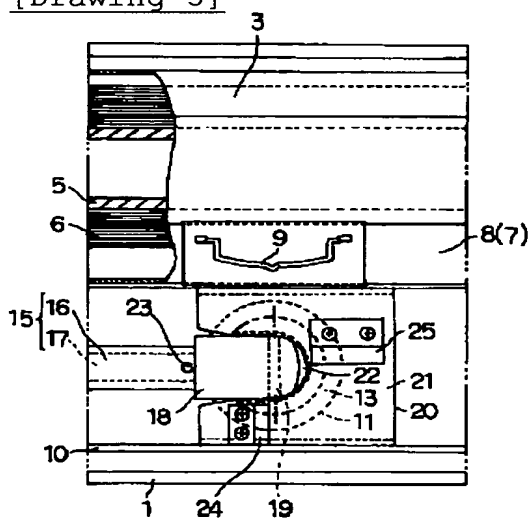
[Drawing 1]



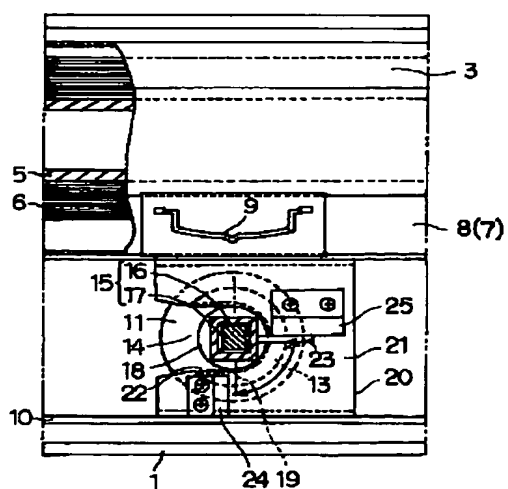
[Drawing 2]



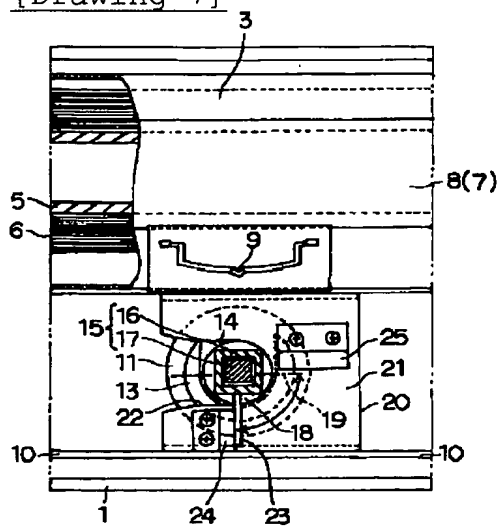
[Drawing 5]



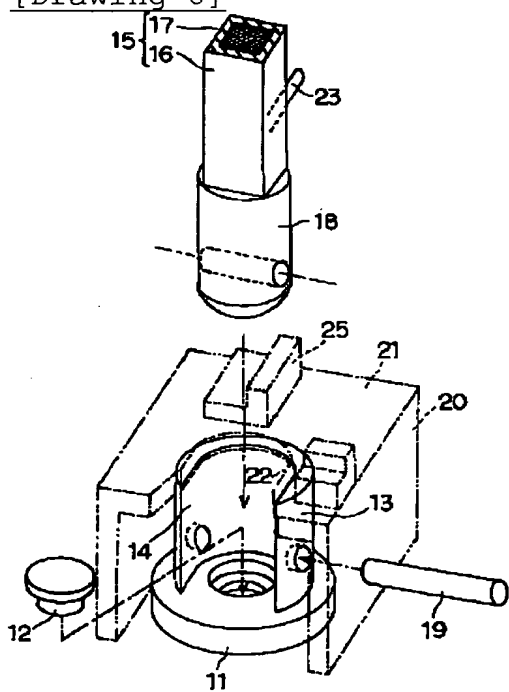
[Drawing 6]



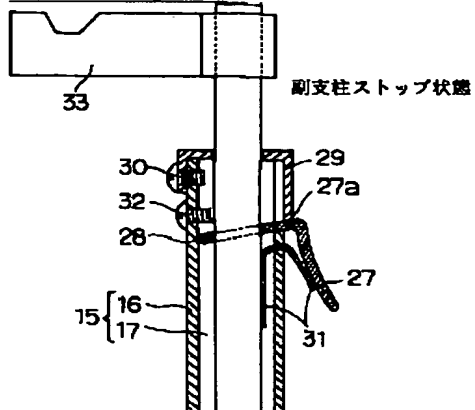
[Drawing 7]



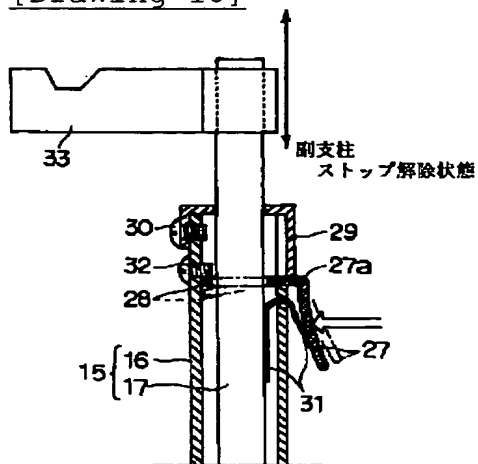
[Drawing 8]



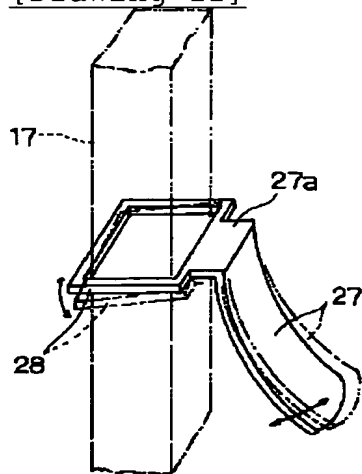
[Drawing 9]



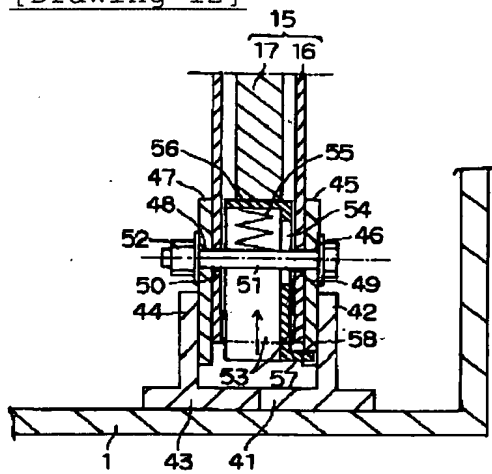
[Drawing 10]



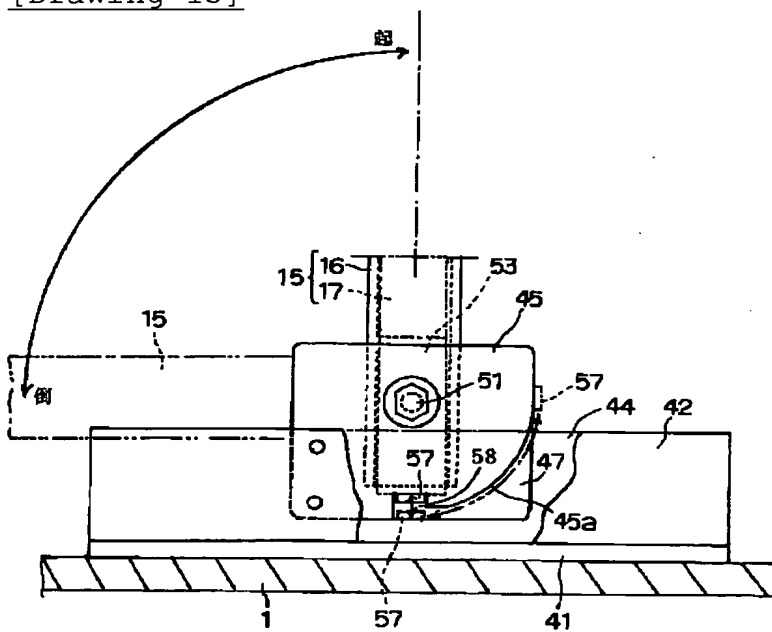
[Drawing 11]



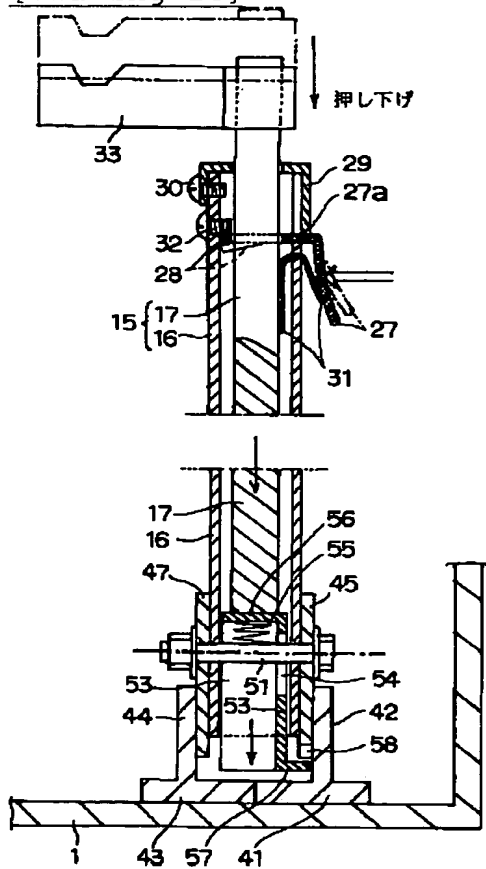
[Drawing 12]



[Drawing 13]



[Drawing 14]



[Drawing 15]

